length, volume, and weight; while temperatures are given in degrees of the Centigrade scale, usually accompanied by the corresponding degrees of Fahrenheit's scale, inclosed in brackets. It would have been more consistent and certainly more advantageous, by facilitating the reading of the student, if the foreign measurements of length, etc., had also been accompanied by their English equivalents. Very few students and practitioners are able, at sight and without calculation, to obtain an adequate idea of the weight, volume, or length of bodies when expressed in terms of the decimal system. By placing the equivalent figures side by side, in all cases in which such measurements are referred to, the student is gradually and insensibly taught to appreciate correctly foreign metrical expressions.

We turn now to a brief examination of Prof. Flint's *Text-book of Human Physiology*. This is simply an abridgment or condensation of the author's larger work recently completed in five volumes, and from time to time fully analyzed in former numbers of this Journal. While, on the one hand, the numerous bibliographical citations and historical references contained in the larger work have been excluded from the "text-book," on the other, many admirable illustrations have been introduced, derived, for the most part, from the works of Sappey, Haeckel, Robin, Marey, Dalton, Woodward, and other foreign and domestic authors. The introduction of so many well-executed wood-cuts and plates serves to lighten the labour of the student, by illustrating the text, and thus enhances very materially the educational value of the work.

In turning over the pages of Prof. Flint's "Text-book," we notice that more has been done in the way of condensation than of revision of the material of his *Physiology of Man*. In the former work the frequent repetitions which needlessly increased the size of the latter have been avoided, some additions have been made, and certain changes of opinion expressed. These additions, however, have been too few to materially change the work. It is not, therefore, necessary to present our readers with an analysis of its contents. Suffice it to say, that we consider the work to be an important addition to American medical literature, and cordially commend it to both students and practitioners as a valuable manual of the science of physiology. J. A. M.

ART. XXXI.—*Vision: its Optical Defects and the Adaptation of Spectacles. Embracing, First, Physical Optics; Second, Physiological Optics; Third, Errors of Refraction and Defects of Accommodation, or Optical Defects of the Eye.* With Seventy-four Illustrations on Wood, and Selections from the Test-Types of Jaeger and Snellen. By C. S. FENNER, M.D. 8vo. pp. 299. Philadelphia: Lindsay and Blakiston, 1875.

IN proposing to give to a work on physiological optics, and the errors of refraction and accommodation, "a concise and popular yet comprehensive form," the author has set himself a most difficult task, which he has partially succeeded in accomplishing. A scientific book which adds absolutely nothing to the existing stock of knowledge on the subjects of which it treats, has no other "raison d'etre" than its claim to teach systematically and clearly what is already known; and Dr. Fenner's book must be judged entirely by this standard.

The subject is divided into three sections: First, physical optics; second, physiological optics ; third, errors of refraction and defects of accommodation, or the optical defects of the eye.

The first is a concise and elementary summary of the laws of light, the emission and wave theories, the formation of images, the various phenomena of prismatic colours, etc., and is well adapted to interest the general reader, or even to instruct the beginner.

So far as the arrangement of its material is concerned, part second is not so satisfactory; while less than a page is devoted to the "anatomical construction of the eye," about half a page to the simplified diagrammatic eye of Listing, and two or three pages to the ophthalmoscope, some five pages are taken up by an apparently purposeless introduction of abstruse dioptric calculations transferred from the appendix of the great work of Donders, where they appear in "small print" for the benefit of "only those who wish to penetrate more deeply into the subject." The general reader is not likely to exercise his brain with these triangles and equations, but, if he does, he will find at the end that his calculations have taken him no further than the cornea, and that his hard-earned knowledge is applicable only to the aphakial eye. Generally, however, the selections from Donders and Helmholtz, of which this section largely consists, are judicious, and the first two-thirds of the book form an excellent popular treatise on physiological optics; indeed, we know of no other one work from which a general knowledge of the subject can be obtained so readily.

The third section explains the nature of the various optical defects of vision, and gives directions for detecting and correcting them ; in short, is a kind of "hand-book" of refraction and accommodation. The subjects of presbyopia, hypermetropia, and myopia are well handled, but the directions for treating astigmatism are wanting in system and precision, and are strangely at fault in leaving the student to suppose that the principal meridians of curvature are always vertical and horizontal. So far from this being the rule, it is almost exceptional, and the exact determination of the inclination to be given to the axis of the cylinder is often the most difficult part of the correction. Many patients are extremely sensitive to a variation of the axis of even a few degrees.

An appendix is added, containing general instructions for the selection of glasses, for the benefit of persons situated beyond the reach of competent professional advice. Test types are furnished for the use of such persons, but trial glasses must be supplied from the spectacle dealer's stock, and, unless the "opticians" of the smaller towns have a more modest appreciation of their scientific attainments than their brethren of the cities, there will be difficulties in the way of carrying out the plan of every man his own optician.

With the facilities now afforded at the better medical colleges for acquiring some practical knowledge of ophthalmic surgery, there is no good reason why any practitioner of modern date should not be a safer guide than either the patient himself or the dealer.

In conclusion, we can congratulate the author on having realized the hope expressed in his preface, that his volume might "give much useful information to the student, the physician, and to those of the general public who desire to obtain an insight into this department of science." The author's style is correct and clear, and the publisher's work is unexceptionable. An oversight in proof-reading is met with only now and then, the most marked one is the repeated occurrence of the plural noun "phenomena" with a singular verb.

G. C. H.